



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,475	09/29/2006	Niall James Caldwell	1025-P04207US0	9543

110 7590 02/16/2011  
DANN, DORFMAN, HERRELL & SKILLMAN  
1601 MARKET STREET  
SUITE 2400  
PHILADELPHIA, PA 19103-2307

EXAMINER
----------

STIMPert, PHILIP EARL

ART UNIT	PAPER NUMBER
----------	--------------

3746

MAIL DATE	DELIVERY MODE
-----------	---------------

02/16/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/599,475	<b>Applicant(s)</b> CALDWELL ET AL.	
	<b>Examiner</b> Philip Stimpert	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2010 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 17, 2010 has been entered.

### ***Specification***

2. The amendment filed 17 December 2010 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the drawings showing four cylinders and the discussion thereof in the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 3746

4. Claims 11-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 11 recites a fluid controller, apparently representing the commuting valve (2) of the applicant's disclosure. The claim particularly recites "wherein in a first position the fluid controller provides a fluid path between the working chambers and the first manifold and blocks the fluid path between the working chambers and the second manifold," and vice versa in a second position. This appears to require a simultaneous communication of multiple working chambers with a single manifold. That limitation is not disclosed in the application as originally filed.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Regarding claim 11, the claim recites a fluid controller, apparently representing the commuting valve (2) of the applicant's disclosure. The claim particularly recites "wherein in a first position the fluid controller provides a fluid path between the working chambers and the first manifold and blocks the fluid path between the working chambers and the second manifold," and vice versa in a second position. On its face,

Art Unit: 3746

this language appears to require that the fluid controller provides simultaneous communication between all of the working chambers and one of the two manifolds.

This is contrary to ordinary practice, which provides sequential communication over the course of a given revolution between of the chambers and the respective manifolds. It also renders impossible any sort of output flow regulation, as all cylinders will discharge simultaneously when put in communication with the high pressure manifold. Given this seeming contradiction between the requirements of the claim and nature of the applicant's invention, those of ordinary skill in the art are not informed of the scope of the invention.

8. Further regarding claim 11, there is insufficient antecedent basis in the claim for the limitation of "the one of the working chambers."

9. Regarding claim 16, there is insufficient antecedent basis for "the plurality of valves," as only a single valve was recited in claim 11.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 1,774,662 to Parks (Parks) in view of US Patent 5,456,581 to Jokela et al. (Jokela) and US Patent 5,259,738 to Salter et al. (Salter).

Art Unit: 3746

12. Regarding claim 1, Parks teaches a fluid working machine (Fig. 1) with variable volume working chambers (11, 12) which is connected to a commutator valve (55) which alternately connects the working chamber (11) to either of two manifolds (low pressure 46, and high 65/54), and a flow path (51) between the chamber (11) and the commutator valve (55). Parks does not teach a valve in the flow path (51). Jokela teaches a fluid working machine having several working chambers (53) and having electronically controlled valves (84) in the inlet to the chamber. Jokela teaches these valves as elements in a system for regulating the outlet pressure. However, the valves (84) of Jokela also operate as check valves regulating inlet flow, and cannot be closed on command. Since the commutator valve of Parks handles inlet and outlet flow switching and checking, one of ordinary skill would appreciate that a different type of valve would be needed in order to obtain the pressure regulation of Jokela. Salter teaches a solenoid valve (13) which allows electronic closure of a passageway. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the pump of Parks with solenoid valves as taught by Salter provided in the flow path (51) as taught by Jokela in order to regulate the outlet pressure of the pump of Parks.

13. Regarding claim 2, Jokela and Salter both teach that the valve is electronically controlled.

14. Regarding claim 3, Jokela teaches a shaft position sensor (102) which provides information to a controller (104) as to when the shaft passes a known phase angle (col. 4, ln. 5-22). Since the shaft position sensor (102) provides information to the controller

Art Unit: 3746

(104) as part of the pressure regulation system being provided to Parks by the instant combination, it would have been obvious to provide the pump of Parks with a shaft position sensor as taught by Jokela in order to provide the information necessary for pressure regulation (see Jokela, col. 4, ln. 5-22).

15. Regarding claim 4, in modifying the pump of Parks, it would be obvious to one of ordinary skill to use the valves provided per the teachings of Jokela and Salter to isolate the working chamber in order to effect a decrease in outlet pressure. Further, the working chamber volume is a cyclic variable. Therefore the volume may be considered to be "approaching its minimum" at substantially any point in the cycle, since a minimum will be encountered thereafter. Finally, "close to the time" is considered to be very broad language reading on any point in the cycle. Thus any particular point of actuation of the valve is considered to satisfy the language of claim 4.

16. Regarding claim 5, Salter teaches that a control system for a pump which takes cylinders out of service may be run by a controller to sum a previous flow demand relative to the output flow to create a total displacement demand and compare it with an error, and based thereon, to choose whether to activate a particular cylinder in order to minimize ongoing displacement error (col. 6, ln. 10-55). It would have been obvious to one of ordinary skill in the art to apply this method as taught by Salter to the pump of Parks as controlled by the controller of Jokela, in order to minimize errors in a system employing the pump.

Art Unit: 3746

17. Regarding claim 6, Salter teaches a controller reading demand from an external signal line (col. 6, ln. 34-36) in order to regulate volumetric flow rate (col. 6, ln. 27-31) by deciding whether or isolate or activate working chambers.

18. Regarding claim 7, Jokela teaches maintaining constant output pressure, which one of ordinary skill in the art would expect to be effectively proportional to throughput flow. One of ordinary skill would expect the ratio of working to idle cylinders to fall as shaft speed (measured by shaft encoder 102) rises, in order to maintain the constant output pressure.

19. Regarding claim 8, Salter teaches an apparatus which may be configured as a motor. One of ordinary skill would appreciate that such a configuration would be possible with the pump of Parks, for instance by reversing the commutator valve (55). So modified, the controller would be able to choose the actuation point of the valve member. As such, it is capable of performing the function set forth by claim 8. The examiner notes that claim 8 merely requires that the controller “can choose” to operate as specified.

20. Regarding claim 9, Parks teaches that the apparatus is arranged to function as a pump. Further, the controller would be able to choose the actuation point of the valve member. As such, it is capable of performing the function set forth by claim 9.

21. Regarding claim 10, the controller of the combined references would be able to choose the actuation point of the valve member. As such, it is capable of being operated in the fashion set forth by claim 10.



Art Unit: 3746

22. Regarding claim 11, as best understood by the examiner, Parks teaches a fluid working machine (Fig. 1) with a plurality of variable volume working chambers (11, 12), two manifolds (low pressure 46, and high 65/54), and a fluid controller in the form of a commutator valve (55). Parks teaches that the fluid controller (55) alternately connects each working chamber (11, 12) with one at a time of the two manifolds. Parks does not teach a valve in the flow path (51) operable to impede fluid flow between the working chamber and the fluid controller (55). Jokela teaches a fluid working machine having several working chambers (53) and having electronically controlled valves (84) in the inlet to the chamber. Jokela teaches these valves as elements in a system for regulating the outlet pressure (see abstract). However, the valves (84) of Jokela also operate as check valves regulating inlet flow, and cannot be closed on command. Since the commutator valve of Parks handles inlet and outlet flow switching and checking, one of ordinary skill would appreciate that a different type of valve would be needed in order to obtain the pressure regulation of Jokela. Salter teaches a solenoid valve (13) which allows electronic closure of a passageway. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the pump of Parks with solenoid valves as taught by Salter provided in the flow path (51) as taught by Jokela in order to regulate the outlet pressure of the pump of Parks. Thus modified, the pump of Parks would include a solenoid valve as taught by Salter capable of impeding fluid flow between the working chamber and the fluid controller.

Art Unit: 3746

23. Regarding claim 12, according to the combination, the pump of Parks would include a controller (104) as taught by Jokela operable to selectively control the solenoid valves provided by Salter.

24. Regarding claim 13, according to the combination, the pump of Parks would include a sensor in the form of a shaft encoder (102) as taught by Jokela detecting a shaft position which is used by the controller (104) to control operation of the valves.

25. Regarding claims 14 and 15, according to the combination, the pump of Parks would be provided with a valve associated with each working chamber, and a controller to operate them, as taught by Jokela.

26. Regarding claims 16-18, according to the combination, the pump of Parks would include a sensor in the form of a shaft encoder (102, which monitors angular position, or phase angle, of the shaft, see abstract) as taught by Jokela detecting a shaft position which is used by the controller (104) to control operation of the valves.

27. Regarding claim 19, Parks teaches that the working chambers are cycle between minimum (see cylinder 11 in Fig. 1) and maximum (see cylinder 12 in Fig. 1) volumes. Further, the controller taught by Jokela would be able to choose the actuation point of the valve member. As such, it is capable of performing the function set forth by the claim.

28. Regarding claim 20, Parks teaches that the manifolds are low and high pressure manifolds, and that the fluid controller is a commutator valve (55) comprising a rotatable port plate (55).

***Response to Arguments***

29. Applicant's arguments filed 17 December 2010 have been fully considered but they are not persuasive.

30. With respect to the new matter issues, the examiner must maintain that the specification and claims contain new matter as discussed above. In particular, the new drawing sheets at least set forth a particular number of working chambers, i.e. four. There is no support for that feature in the original disclosure of this application.

31. With respect to claim 18, the examiner is persuaded that there is sufficient support to convey to one skilled in the relevant art that the applicant had possession of that subject matter.

32. With respect to the argument that one of ordinary skill would not be able to perform the necessary combination, the examiner disagrees. The examiner also disagrees that the head plate (43) does not have a flow path as claimed. The plate (43) very plainly contains two such flow paths (51, 52) connecting each working chamber respectively to the commutator. As such, an increase in the thickness of the head plate (43) is the only modification necessary to provide a location for inserting the solenoid valves envisioned by the combination. This is considered well within the purview of those skilled in the art.

33. With respect to the argument that one of ordinary skill would simply replace the commutator valve with electronically controlled valves as taught by Jokela, the examiner notes that Jokela discloses a conventional, primarily mechanical valve system, i.e. a set of ball check valves for both inlet and outlet valving, whose behavior can be adjusted by

Art Unit: 3746

solenoids acting on a signal from a controller. As such, one of ordinary skill, seeking to implement the pressure regulation taught by Jokela in the pump of Parks would be motivated to leave the mechanical commutator system of Parks in place, in an analogous fashion to the check valves of Jokela.

34. In view of the foregoing, the rejection over Parks in view of Jokela and Salter is maintained.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/599,475  
Art Unit: 3746

Page 12

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/P. S./  
Examiner, Art Unit 3746  
11 February 2011